Small Business Innovation Research/Small Business Tech Transfer

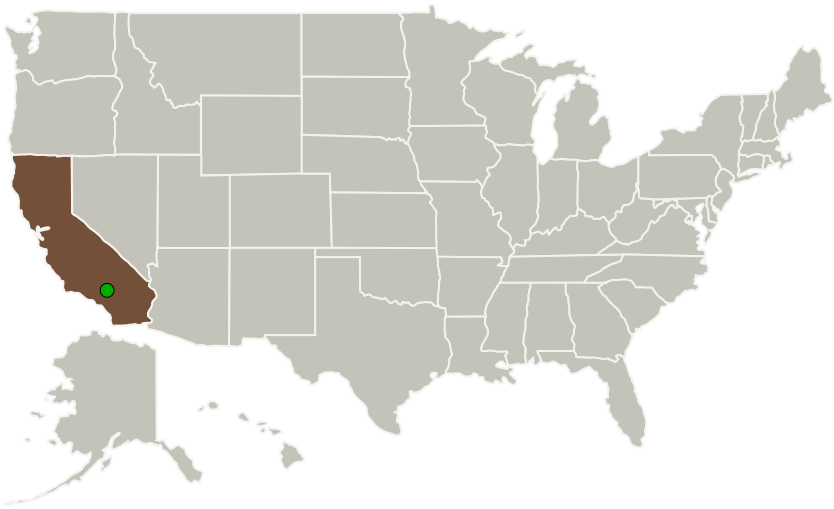
Sensitivity Analysis for Design Optimization Integrated Software Tools, Phase I

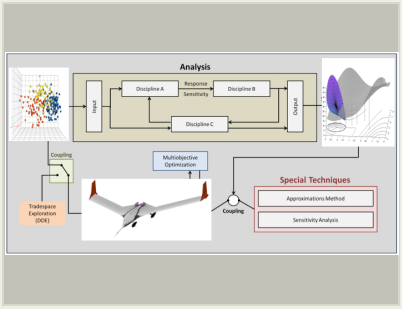
Completed Technology Project (2016 - 2017)

Project Introduction

The objective of this proposed project is to provide a new set of sensitivity analysis theory and codes, the Sensitivity Analysis for Design Optimization Integrated Software Tool set, to work within the existing NASA O3 Tool. In this Phase I effort, the sensitivity approach will be implemented for two basic types of analysis, namely static systems of equations (linear and non-linear) and eigen-problems. This implementation will focus on the elements most commonly used for aerospace design; beam, plate, and shell elements. The following specific goals are identified: 1 Integrated Multidisciplinary Sensitivity Analysis Toolset for Design Optimization (software) 2 Use of Advanced Algorithms to Maximize Computational Efficiency (analytic sensitivities) 3 Compatibility with Existing NASA Software Design Tools for computational integration to O3.

Primary U.S. Work Locations and Key Partners





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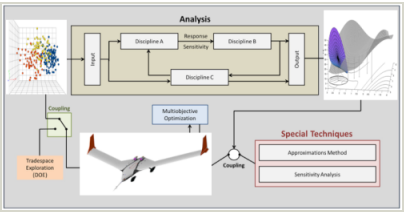
Organizations Performing Work	Role	Type	Location
Linked Inc	Lead Organization	Industry	Sherman Oaks, California
Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California
University of Southern California(USC)	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Los Angeles, California

Primary U.S. Work Locations
California

Images



Briefing Chart Image
Sensitivity Analysis for Design Optimization Integrated Software Tools, Phase I
(https://techport.nasa.gov/image/132960)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Linked Inc

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

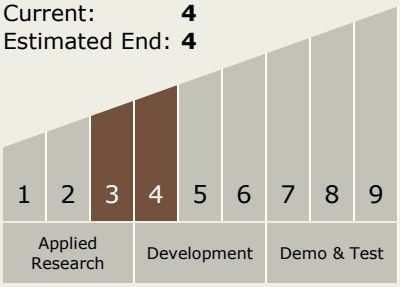
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Abdon E Sepulveda

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.5 Mission Architecture, Systems Analysis and Concept Development
    - TX11.5.1 Tools and Methodologies for Defining Mission Architectures or Mission Design